Project Circle

Smart investments, sustainable impact

Electric Vehicle (EV) drivers are stuck playing hide and seek with chargers

Challenges

- Uneven charger distribution
- Long wait times
- Incompatible standards

It’s like having the latest smartphone with no signal towers nearby.

Charging California: Optimizing EV Charging Stations to Meet Growing Demand

Divyesh Sai Annavarapu, Emre Can Baykurt, Crystal Leatvanich, Dizhao Zhang

The Growing Need for Sustainable Mobility

Electric vehicles are revolutionizing transportation, but infrastructure lags behind

EV Adoption is Accelerating with 2M+ vehicles expected in California by 2027

EVs reduce greenhouse gas emissions by up to 50% compared to traditional vehicles.

Infrastructure Challenges:

Charging Deserts: Many regions lack accessible and reliable charging stations.

Energy Inefficiency: Current infrastructure often strains the grid and relies on non-renewable energy sources.

The Opportunity:

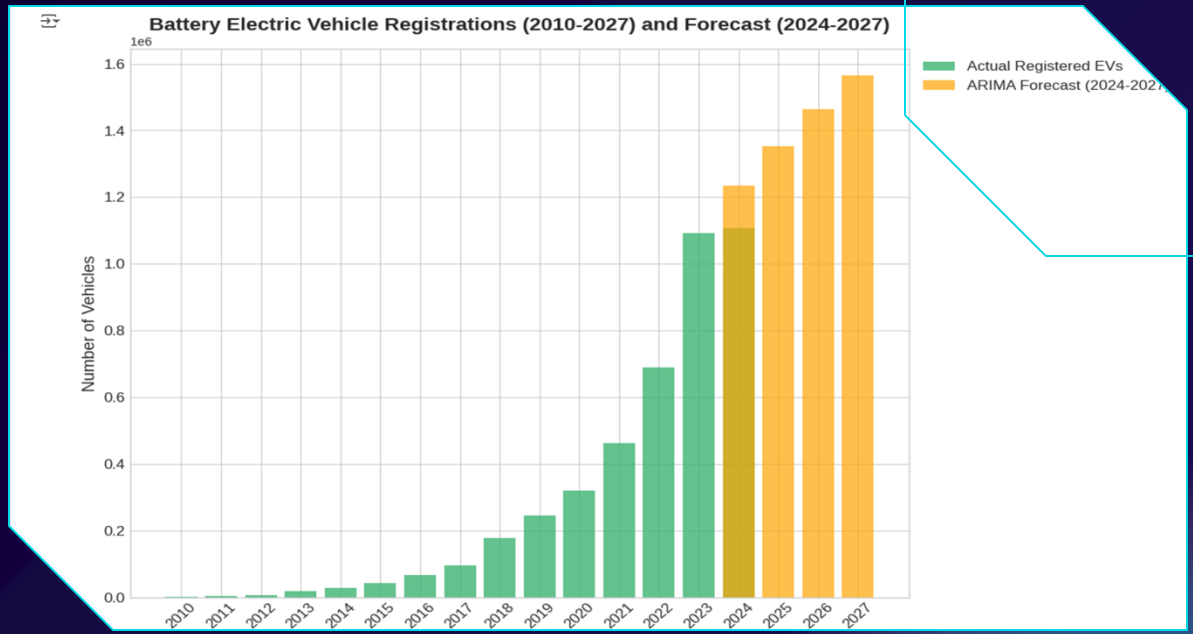
•Strategic placement of chargers can reduce grid strain, promote renewable integration, and unlock $10B+ in investments by 2030.

The EV boom is coming - will the chargers be ready?

In 2023, EV sales accounted for 7.6% of all new vehicle sales in the U.S., up from 5.6% in 2022.

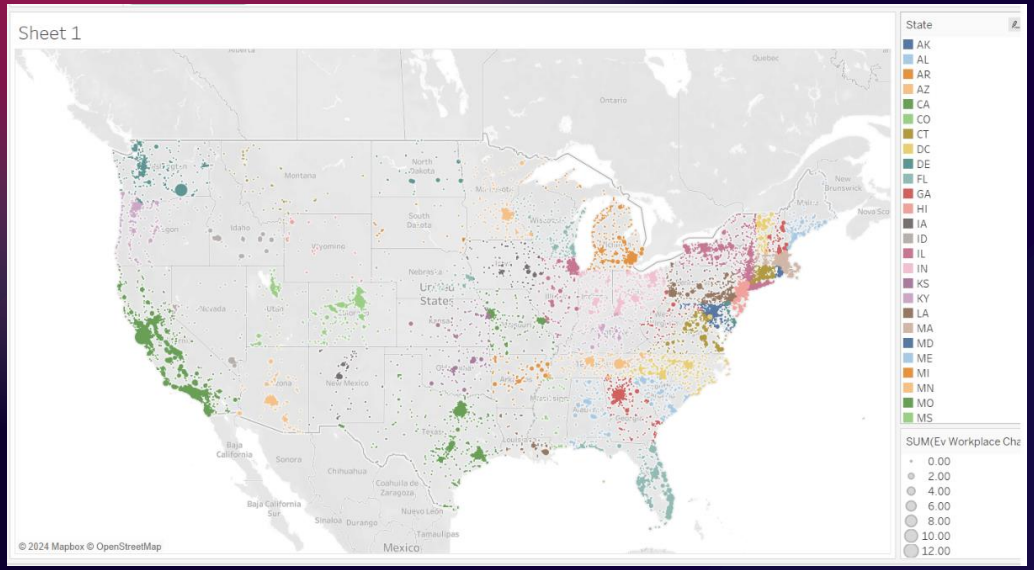
California leads the nation in EV registrations, with 35% of the U.S. total, followed by Florida and Texas.

EVs convert 80% of their battery energy into movement, compared to only 20% for traditional gasoline vehicles.



The EV industry is projected to create over 2.5 million jobs globally by 2030, contributing to economic growth

Insights into EV Charging Infrastructure: Challenges and Growth

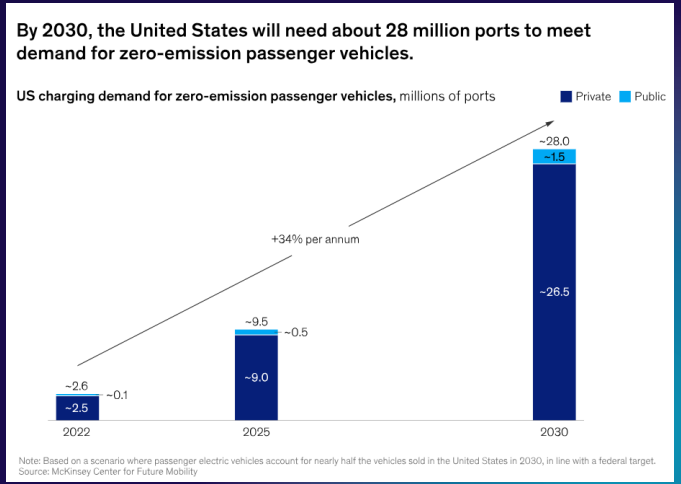


High-density regions in states like California and the East Coast reflect strong EV adoption.

Low-coverage areas highlight charging deserts, revealing untapped investment opportunities.

Meeting Demand by 2030:

- EV charging ports are expected to grow from **2.6M in 2022** to **28M by 2030**, with a **34% annual growth rate**.
- Private ports dominate but public ports are expected to grow from **0.1M to 1.5M by 2030**.



California's Charging Network

California as the EV epicenter:

Leads in EV adoption due to subsidies and mandates.

Focus on public stations for open-access scalability.

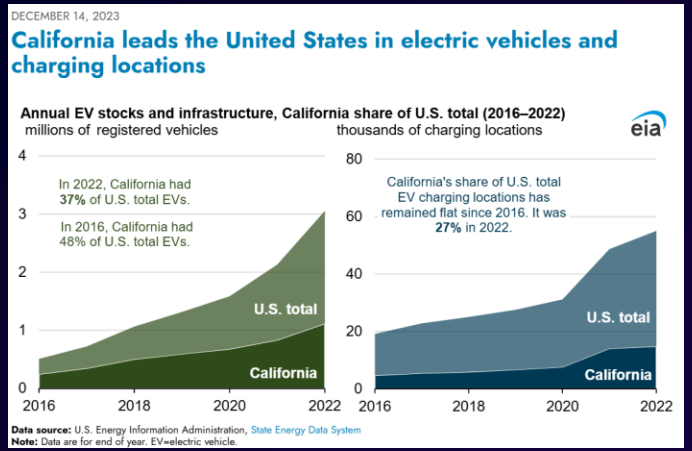
Opportunities:

- **Population Advantage**
- **Wind Power Potential**
- **Solar Energy Advantage**
- **Placement Gap**

"If California's EV future is the gold rush, chargers are the picks and shovels."

- Sniff Dogg

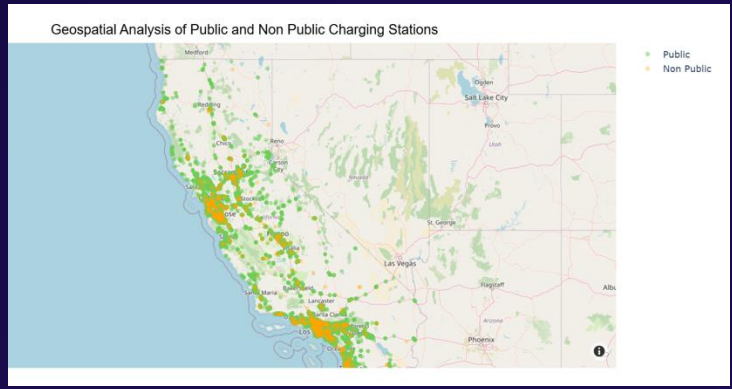
”Analysis on California as the perfect Market”



EV Stock Growth

Charging Infrastructure

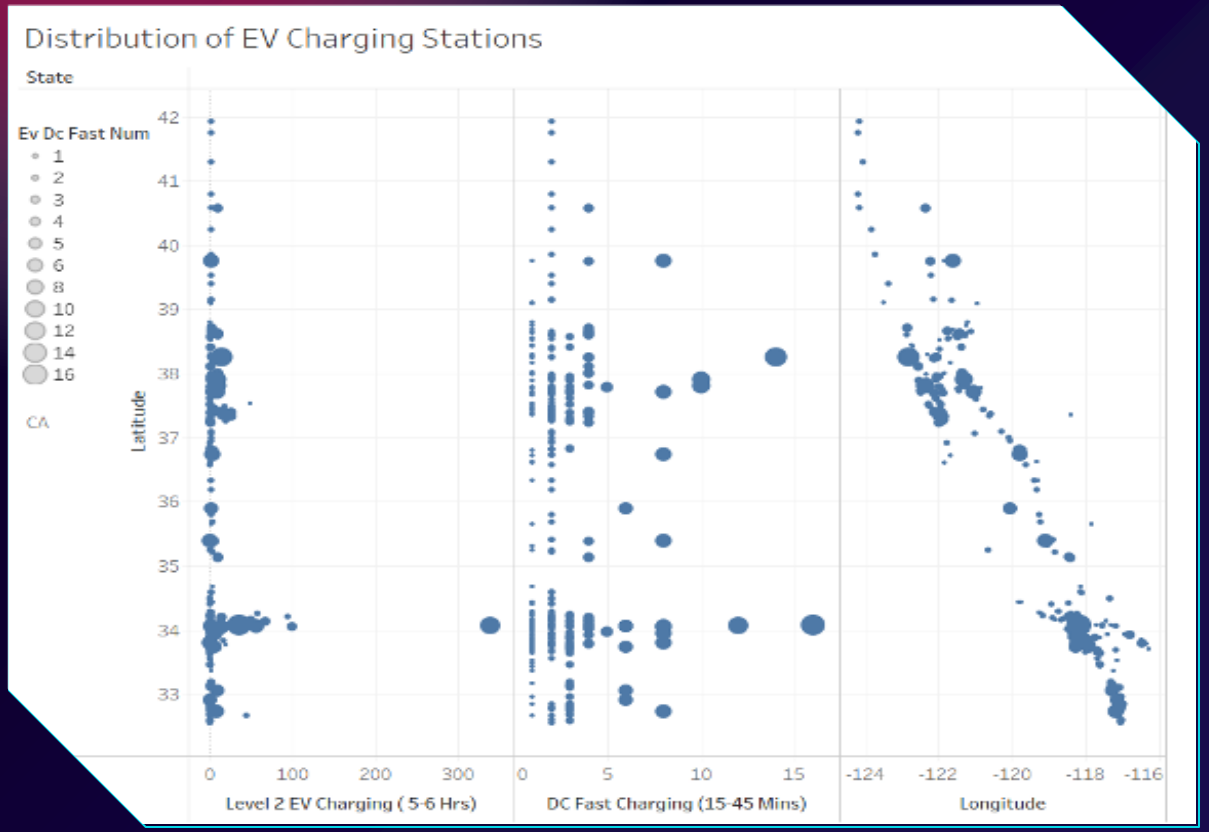
Significant EV adoption in California highlights the need for scaling charging infrastructure to maintain leadership.



- Southern California holds 59.88% of the state’s population, concentrated in hubs like Los Angeles and San Diego.
- EV chargers are clustered in urban areas, leaving Northern California sparsely covered.
- Aligning charger placement with high-demand and underserved regions maximizes accessibility and efficiency.

Distribution of Charging Stations by Type

Speed matters—drivers need fast solutions, not a slow drip



Level 2 Chargers: Dominate urban areas but require 5-6 hours to charge.

DC Fast Chargers: Sparse but critical for long-distance travel (15-45 minutes to charge)

Geographic Spread: Urban hubs like Southern California and the Bay Area have dense clusters; rural regions remain underserved.

Station Density: Larger points indicate locations with multiple fast chargers, emphasizing key hubs for EV charging.

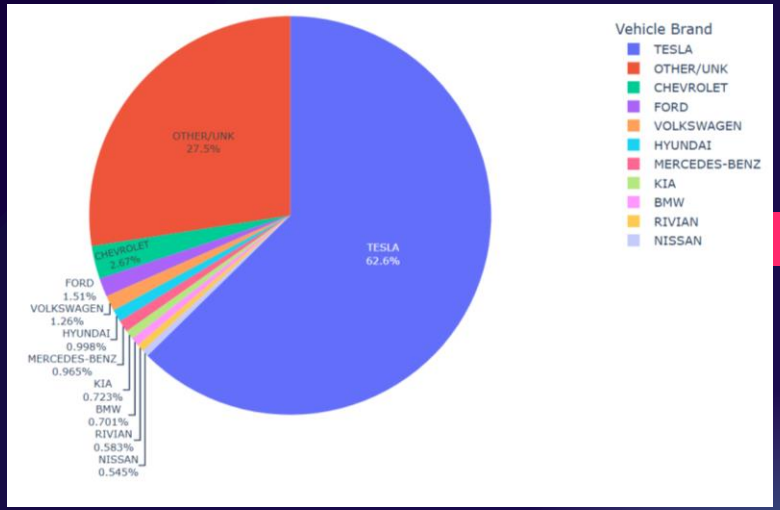
Market Share Distribution by Charger Type

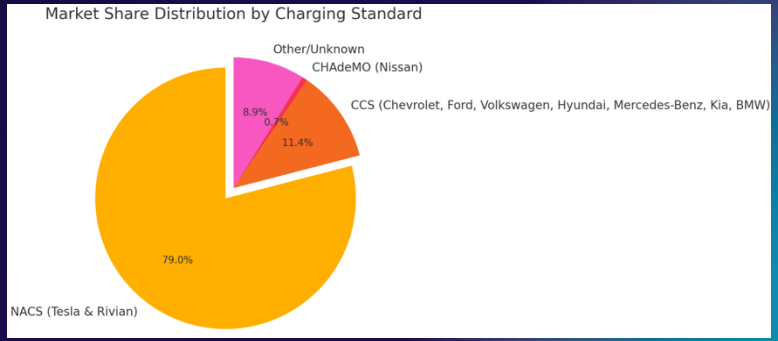
Market Dominance: NACS (Tesla and Rivian) accounts for 79% of the market, followed by CCS (11.4%) and CHAdeMO (0.7%).

Tesla Leadership: Tesla leads with 62.6% market share among EV brands, with other brands contributing smaller portions.

Charging Standards: The dominance of NACS reflects Tesla's influence on charging compatibility and market leadership.

Standardizing charging compatibility through NACS enhances accessibility and adoption across the EV ecosystem.





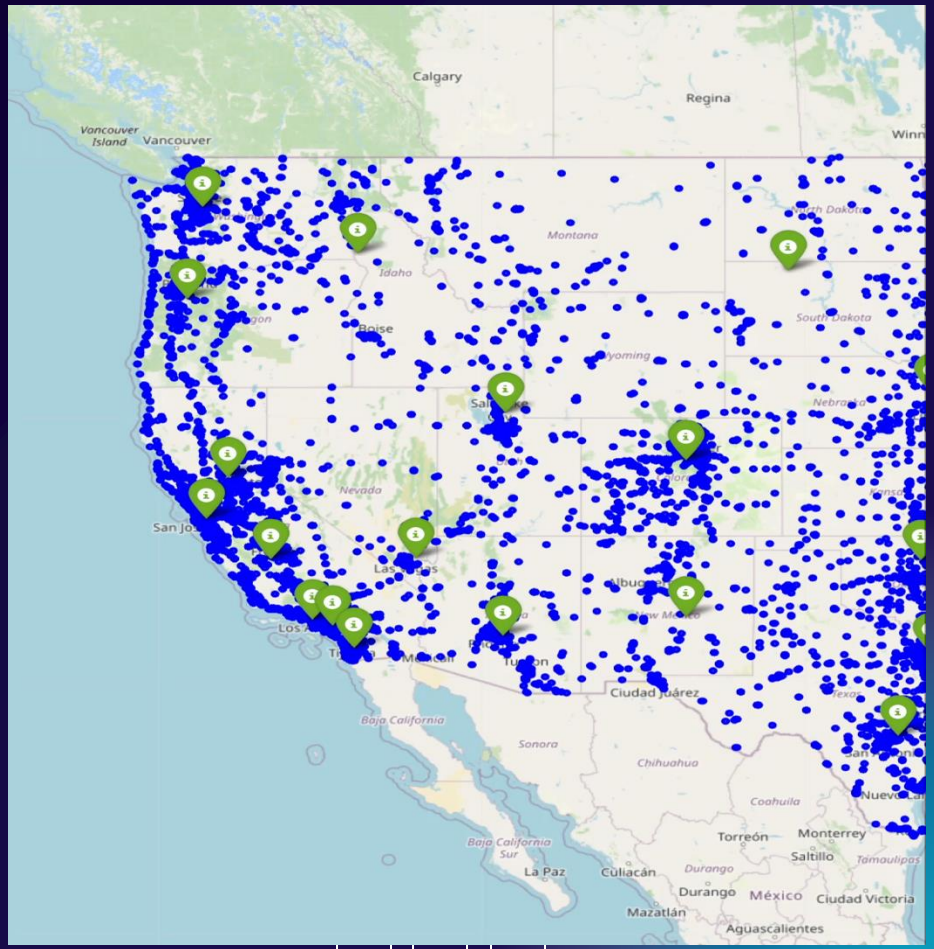
OUR SOLUTION

Eagles Crest Road, San Diego

Leemore Station, California

Powai, California

Hayward, San Fransisco



IMPACT ON DRIVERS

"Less stress, more road trips."

AI-Powered Solutions for Smarter Charging Networks:

Optimized Charger Placement:

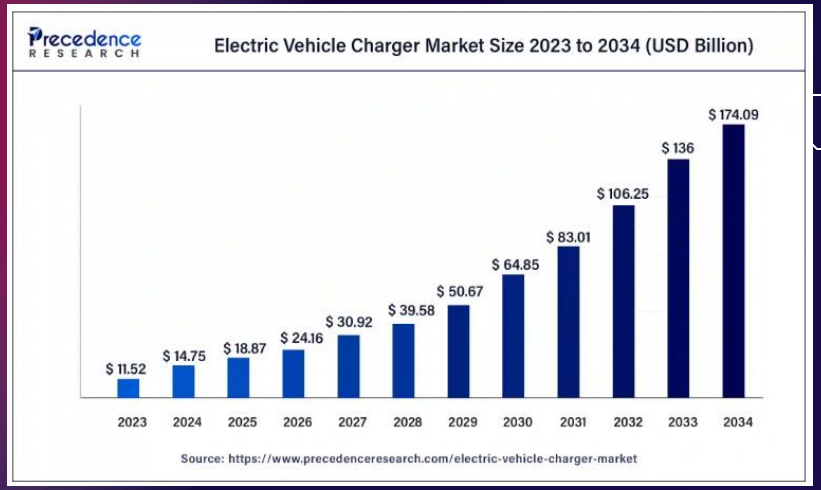
Machine learning analyzes EV density, traffic patterns, and renewable energy proximity to identify high-demand areas for strategic station placement.

Real-Time Energy Management:

Dynamically adjusts charging speeds using grid load and renewable energy integration, optimizing energy efficiency and reducing carbon footprints.

Smart Scheduling Tools:

AI-driven tools help fleet operators and EV owners plan cost-effective, eco-friendly charging schedules.



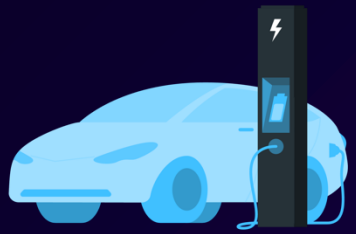
MARKET CAP

Investments in **top 5 clusters yield an average ROI of 265%**

For every $1 spent, expect $2.60 back—and a cleaner planet.

BUSINESS MODEL

COST'S



$40K per charger

$10K Approvals and Installation

$5K/year maintenance

REVENUE

$182,500/year for 5 chargers at high-demand sites

ADDRESSING CHALLENGES

Land Acquisition

Utilize underused spaces near malls or highways.

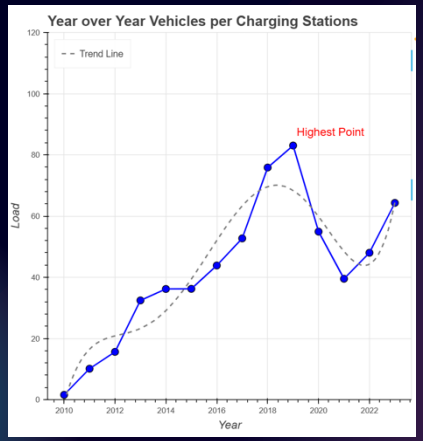
Regulatory Hurdles

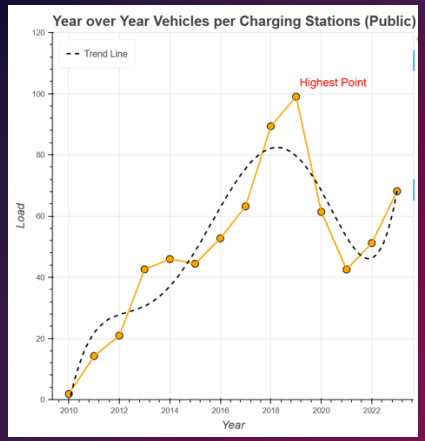
Fast-track permits with data-driven site proposals

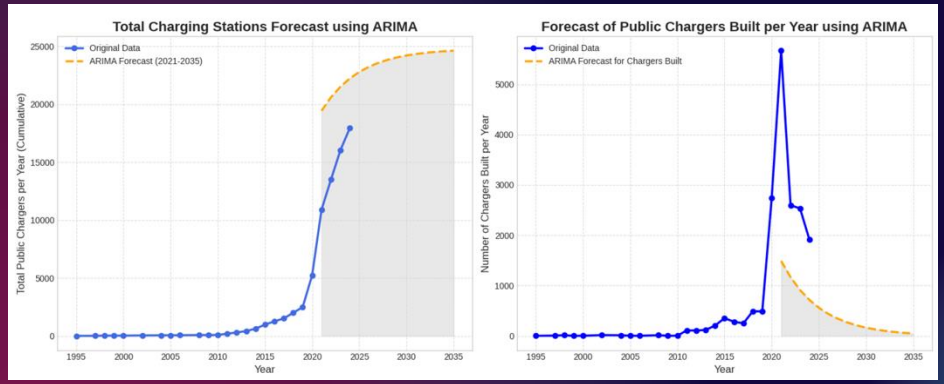
Scalability

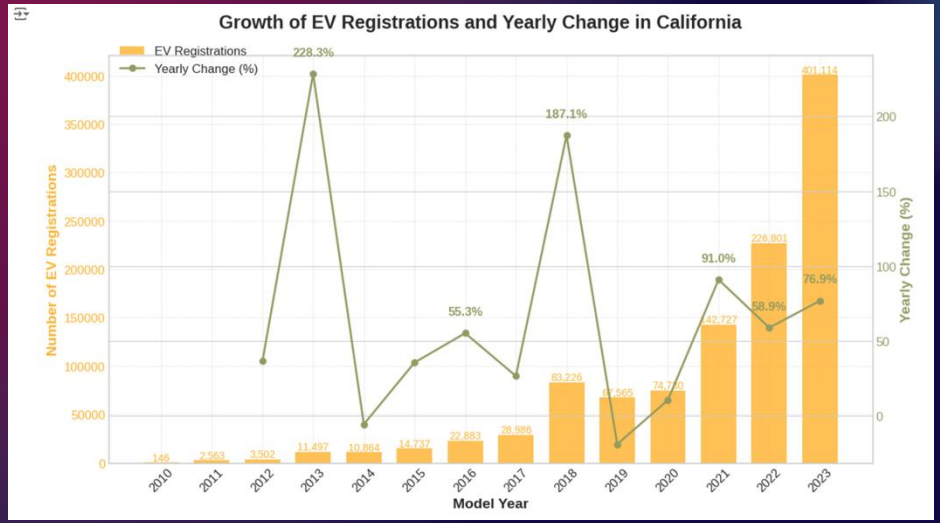
From California to the nation—one profitable charger at a time

INVEST TODAY, CHARGE TOMORROW









WELCOME TO THE FUTURE…

RESOURCES

1.https://www.mdpi.com/2032-6653/12/1/20
2.https://windexchange.energy.gov/maps-data/13
3.https://www.reddit.com/r/socal/comments/nyz7qz/california_demographic_map_what_percent_of/
4.https://www.eia.gov/todayinenergy/detail.php?id=61082
5.https://www.mckinsey.com/features/mckinsey-center-for-future-mobility/our-insights/can-public-ev-fast-charging-stations-be-profitable-in-the-united-states?utm_source=chatgpt.com
6.https://en.wikipedia.org/wiki/Megawatt_Charging_System?utm_source=chatgpt.com
7.https://living.acg.aaa.com/blog/auto/future-ev-charging-networks-truck-stops?utm_source=chatgpt.com
8.https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-vehicle-charging?utm_source=chatgpt.com
9.https://www.hbs.edu/bigs/the-state-of-ev-charging-in-america
10.https://www.precedenceresearch.com/electric-vehicle-charger-market#:~:text=The%20global%20electric%20vehicle%20(EV,28%25%20from%202024%20to%202034.